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Memorandum

To: DRAFT

From:

Date:

Subject: EPA E-mails

The following is Ms. Cibulskis' July 8 e-mail "Complete List of EPA Comments on Willow Blvd. FS", with MDEQ responses.

1. *References. Throughout the report, the RI/FFS includes several references such as (MDEQ, 1994). However, there does not appear to be any complete references listed at the end of each section, or a separate section listing all the references. Perhaps each reference was given completely earlier in the report and a shortened reference given each time it was mentioned subsequently? Without a separate list of references, and with such a long report, it is hard to know what citations such as (MDEQ, 1994) are referring to. Can the contractor put together a section listing all the references used for this report?*

Section 9 – References exist as part of the document. They have been double checked and are forwarded to you for your information.

2. *Introduction. In the Introduction the document should note that this RI/FS was completed by the MDEQ as part of its responsibilities under the SMOA, and pursuant to Michigan state law authorities. MDEQ intended that its analysis would be consistent with CERCLA and the NCP. Please revise.*

Page 1-1 has been revised to mention that the MDEQ completed the document as part of its responsibilities under the SMOA. Our intention to be consistent with CERCLA is also mentioned.

3. *Page 1, Section 1.1, Scope of the RI/FFS: This section states that the RI/FS was performed to comply with the AOC by MDEQ for the API/PC/KR site. However, this RI/FFS was submitted by MDEQ, not the PRPs. Please provide more information about the enforcement history. There was an AOC between MDEQ and the PRPs and then, at some point the MDEQ took the RI/FFS over and is completing the document. Please include the date the AOC was signed and the date the MDEQ took the document over (e.g., In letter dated xx, the MDEQ notified the PRPs that they would be...).*

This document was originally created by the PRPs and much of the language was agreed to in numerous iterations. Section 1.4, Enforcement History, has been added:

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In December of 1990, the Michigan Department of Natural Resources and three respondents (HM Holdings, Inc., Georgia-Pacific Corporation, and Simpson Plainwell Paper Company) affiliated with paper mills signed an Administrative Order of Consent (DFO-ERD-91-001), for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund site (API/PC/KR). The AOC outlined Remedial Investigation activities to be performed by the respondents with State oversight. Investigation work on the site was initiated soon after a work plan was approved in 1993.

On January 21, 1997, the respondents submitted a first draft RI/FFS for this Operable Unit to MDEQ. The document (and a draft Proposed Plan) went through a series of revisions, and continued to develop concurrent with ongoing technical discussions and collection of additional samples. Also, based on correspondence with USEPA during RI/FFS development (Boice, 1998), the MDEQ requested inclusion of a "removal alternative," resulting in creation of an alternatives screening document, submitted by the respondents in October, 1998.

While RI/FFS progress continued, voluntary interim response actions were implemented between November 1999 and April 2000. On June 8, 2000, the MDEQ sent a letter to the respondents, detailing 125 remaining concerns (e.g. a need to include information pertaining to the latest sampling and interim response activities) with the 1999 iteration of RI/FFS.

The respondents were directed (MDEQ, September 26, 2000) to make specific changes to the document, include additional relevant data and discuss the site consistent with present-day conditions. Additional groundwater samples and more data from residential areas were collected. Upon review of the resulting submittal (March 2001), the respondents were informed that this latest version of the RI/FFS was still not adequate for approval. Supporting information, addressing 25 unresolved concerns, was required. On November 19, 2001 MDEQ formally rejected the paper companies' RI/FFS and took over its revision in accordance with the provisions of the AOC. "

4. Page 1-4, Section 1.2.1, Willow Blvd. Site and Section 1.2.2, A-Site. Please describe the surface of the Willow Blvd. and A-Sites. Has a soil or other cover material ever been applied to either area? Are the areas vegetated? Or are paper residuals present at the surface? Please discuss.

There was a six inch sand layer placed on top of the Willow Boulevard Site after interim response activities conducted between November 1999 and April 2000 (Section 4.1.1, Page 4-2). This is also noted on Figures 12A and 12B. There are exposed residuals at A-site (never covered) and areas of Willow Boulevard where the sand layer has been disturbed. There is limited revegetation of portions of the Willow Boulevard site (grass seed was sown as an erosion control measure). Otherwise, vegetation on both sites is the result of naturally occurring overgrowth. Sections 1.2.1 and 1.2.2 have been revised to discuss the present-day surface. Photographs have also been included.

5. Section 1.2.3.1, Section 3.1.2 and Figures 12, 12A and 13A, 13B and 13C. Figures 12,

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12A and 13A, 13B and 13C, but none of the other figures, show standing water in direct communication with the Kalamazoo River in the Area East of Davis Creek. That this area is, or may be at times, inundated by the Kalamazoo River, is not discussed anywhere in the RI/FFS. The discussion of this area in Section 1.2.3.1 describes it as a 3.5 acre shrub vegetated area surrounded by a low earthen berm. Section 3.1.2 describes it as a lagoon area with an earthen berm. But no where is there any discussion of any direct connection with the Kalamazoo River as shown in the above-mentioned figures. Perhaps in recent years this area has been physically separated from the river and no longer floods? If there are still times during which this area is inundated by the river, this must be discussed, especially as to how it pertains to contaminant transport and cleanup objectives. If not, some discussion should be provided in the text to explain why this area is shown to be in direct communication with the river in some figures but not in others.

The area east of Davis Creek is classified by the USFWS as semipermanently flooded. The berms do not extend all the way around the area, as indicated by topographic contours in the figures. Sections 1.2.3.1, 3.1.2, and 3.4 have been changed to clarify the issue and discuss representation of the area in figures. Sections 5.2 and 6.2.1.3 already discussed this area's potential for contaminant transport; slight clarifications have been made to Section 5.2.

6. *Section 1.3.1: The document states that recycling occurred from 1950s through early 1970s. Actually the recycling of paper manufactured with NCR paper continued through approximately the mid-1980s.*

Section 1.2 and 1.3.1 were revised to clarify that the dates are specific to recycling and disposal associated with the Kalamazoo mills at this operable unit. These are the dates provided by the PRPs.

7. *Section 1.3.2, Objective of the FFS, Page 1-7, Paragraph 1, Last Sentence, also Table of Contents and Section 8, Preferred Remedy: The FFS should not identify a preferred remedy. This will be done by EPA in the Proposed Plan. Please delete all references to the preferred remedy in the report.*

Per the AOC, this is a required element of this document. Clarifying language has been added to Sections 1.3.2 and Section 8, and the preferred remedy is called "tentative." We agree that it would be appropriate for USEPA to respond to this RI/FFS with the "state law and authority" language proposed in Karen Cibulskis' June 2, 2003 e-mail.

8. *Section 3.3, OU Specific Geology and Hydrogeology, Page 3-4, Paragraphs 3 and 4: The report states that residuals at the Willow Blvd. and A-Site contain clay material. Could you please explain where this clay coming from? How does it get into paper waste? Or is this only clay-like material from the paper waste? Please explain.*

According to the Technical Association for the Pulp and Paper Industry (ref: www.tappi.org) clay, titanium dioxide, alum, and other products are added to pulp in the paper making process and control printability, brightness, texture, etc in the finished

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paper. Kaolinite clay was a raw material for the paper making process, and was disposed of as waste along with the unused paper fiber and PCBs from recycled NCR paper.

Section 2.1 and Section 3.3 have been changed to include statements such as: "Clay present in the paper residuals was a raw material in the paper making process and is different than the native clay soils deposited with glacial and fluvial actions in the Kalamazoo River basin.

9. Section 3.3, OU Specific Geology and Hydrogeology, Page 3-6, Paragraph 4 and Page 3-7, Paragraph 1 and Section 5.3, Fate and Transport Within Groundwater, Pages 5-2 and 5-3: *Please discuss any implications of the downward vertical gradients observed at the site, especially in relation to groundwater flow and contaminant fate and transport. This will help indicate areas where additional monitoring wells or characterization may be needed during RD/RA. Are groundwater and groundwater contaminants flowing into the Kalamazoo River adjacent to the site? Does the downward vertical gradient mean that we need to be aware that there could be contaminants deeper in the aquifer? Would these contaminants discharge to the Kalamazoo River too? Where? At some point further downstream? At the 2 sites I had with groundwater/surface water interfaces, the vertical gradients tended to be upward, indicating that the groundwater flow and contaminants were discharging into the river and not migrating any further in the aquifer.*

The following text was added to Section 3.3:

The downward vertical gradients at OU 2 are not expected to exist at any great depth in the shallow aquifer, as the gradients are likely limited by the upward head associated with the regional discharge system.

The following text was added to Section 5.3:

In the vicinity of Willow Boulevard, groundwater is clearly moving toward and discharging into the Kalamazoo River. The downward vertical gradients observed at the site are significant in that they demonstrate the existence of a groundwater transport pathway (and a contaminant transport pathway) from the residual/leachate-influenced groundwater directly beneath the residuals to the underlying aquifer and then to the river, where regional discharge is expected. Since the downward vertical gradients are likely limited by the upward head associated with the regional discharge system, the existence of site contaminants in the deeper portion of the aquifer would be dependent on nonaqueous transport mechanisms. The existing data set does not support the existence of contaminants deeper in the aquifer. This information (along with other site specific and non-site specific data) will be useful in developing an adequate monitoring network."

Generally, double cased paired well construction at vertical and horizontal spacings consistent with those of other OUs should serve well to meet monitoring objectives at the site.

10. Section 3.3, OU Specific Geology and Hydrogeology, Page 3-7, Paragraph 2. *After the horizontal flow gradients of 0.004 and 0.005, please add ft/ft or something similar so that it is clear that these values are expressed in consistent units, and not in inconsistent units*

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that have been inadvertently left out.

Ft/ft has been added throughout the section.

11. *Section 4.2, General, Pages 4-3 to 4-20, and Associated Tables: The subsections and the corresponding tables give ranges of concentrations. Please explain what the upper and lower end of each range signifies. Also, Shari Kolak has indicated that the BERA numbers for PCBs should actually be 6.48 to 8.1 mg/kg instead of 1.6 to 8.1 mg/kg, and the sediment numbers should be 0.5 to 0.6 mg/kg. Also these are SWACs applicable to the overall areas of interest, not specific cleanup levels. Also, Table 4-1A still shows residential/commercial 1 criteria being applied to the Area East of Davis Creek, even though this was revised in the text. Please correct.*

The following has been added to Section 4.2: "Using the range protective of omnivorous songbirds is appropriate at this Operable Unit for several reasons. First, omnivorous songbirds have been observed on the site. Second the range protective of songbirds is within the range of values protective of other animals, such as Red Fox and Great Horned Owl, even though these species but unlikely to be present. For values protective of ecological risk, the lower end of the range is derived from "No Observed Effect" studies of representative species while the upper end is derived from "Lowest Observed Effect" studies. Using a Lowest Observed Effect value as cleanup goal would mean that some adverse effect on representative species is possible. Cleanup goals based on "No Observed Effect" values would be more protective." The complete range is provided to provide flexibility in RD and to be forthcoming with the public regarding the low effect versus the no effect criteria.

Various ways to apply the risk-based criteria, whether averaged over a large area (against 95% UCL) or used as "not to exceed" point value is best discussed in the Record of Decision or in design documents. We believe the current discussion of cleanup values is sufficiently flexible to move forward to Proposed Plan.

12. *Pages 4-16 to 4-20, Section 4.2.7, Groundwater, Subsections, and Tables 4-14 to 4-16B. Table 4-14A appears to calculate GSI values for chemicals that are hardness dependent. However, it's not clear where the calcium and magnesium values used to calculate the hardness values came from. Footnote G of Operational Memorandum 18, seems to indicate that the hardness should be based on the hardness of the receiving stream, but it appears that the calculated hardness values in Table 4-14A were based on the hardness in each individual groundwater monitoring well. Is this appropriate? Please explain how the hardness was calculated and how this method is appropriate and/or what the limitations are.*

The tables have been changed to reflect that hardness of the receiving stream is the basis of the GSI criteria. The hardness value (250 mg CaCO₃/L) is derived from the EPA STORET database (River Street bridge sampling location, just upstream). This value is consistent with the hardness values used to derive effluent limits for the Auto Ion Superfund Site (upstream) and the Kalamazoo WWTP (downstream). This method is

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standard in Michigan for developing GSI criteria, and is outlined in MDEQ Operational Memorandum 18 (and Part 201 Rule 750).

13. *Pages 4-16 to 4-20, Section 4.2.7, Groundwater, Subsections, and Tables 4-14 to 4-16B. Note 1 in Table 4-14A indicates that the lesser of the calculated hardness-dependent GSI values for each location is highlighted, however, these values are not the same GSI values used in Table 4-15A. Perhaps some of the GSI values in Table 4-15A are background or human non-drink values, but this is not clear and should be explained in the tables and the text. If background values were used, the text and tables should explain how the background values were derived.*

Table 4-14A has been revised, and criteria are based on non drink values (the header box now makes this basis clear). Table 4-15A has been revised and is now consistent with Table 4-14-A.

14. *Pages 4-16 to 4-20, Section 4.2.7, Groundwater, Subsections, and Tables 4-14 to 4-16B. Note 3 in Table 4-14A indicates that some sort of mixing zone determination was done. More details are needed. Did MDEQ generate mixing-zone-based GSIs for chemicals detected above the generic GSI? This would include bis(2-ethylhexyl)phthalate, barium, cyanide, manganese, mercury and zinc. Are the values in Table 4-15A based on mixing zones? This should be clarified in the tables and in the text, including Section 5.3, Fate and Transport Within Groundwater, on page 5-2.*

Table 14-A contained errors, one of which was Footnote 3. The table has been revised to specify generic GSI criteria. A mixing zone determination can be made during remedial design, when the monitoring network is in place and better data, representing the GSI are collected. Section 5.3 has been expanded to talk about each analyte that exceeds Generic GSI criteria. We have also clarified the text in Sections 4.2.7; 6.2.1.5; 6.3.2; 6.3.4; and 7.2.4 to better describe that the monitoring network would establish points of compliance, and that mixing zone-based criteria could be developed. Throughout the document generic GSI criteria is now specified.

15. *Page 5-2, Section 5.3, Fate and Transport Within Groundwater, Paragraph 3. This section indicates that the PCBs detected in the groundwater in AMW-3A are not from the A-site because the well is 400 feet upgradient of the A-Site and the well was installed in material containing PCBs. Please explain where the PCBs in the soil came from if they are not from the A-Site. Could they have eroded from the south side of the A-Site and been deposited in the AMW-3A area via overland flow and transport? Could Davis Creek or the Kalamazoo River have backed up into this area during flood events and deposited PCB-laden material here? If there are background sources of PCBs in soil and groundwater, these should be identified and considered.*

The source of the PCBs in the soils in the AMW-3/-3A area has not been definitively established, but is likely associated with disposal activities at the A-site, as the boring logs indicate residual paper waste. This area needs to be addressed as part of any remedial action plan for the Willow Boulevard/A-Site. The contaminated area does

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appear to be limited, according to step-out borings in the vicinity.

16. *Section 5.3, Fate and Transport Within Groundwater, Pages 5-3 to 5-4. This section indicates that bis(2-ethylhexyl)phthalate, barium, cyanide, manganese, mercury and zinc are above the GSI. Again, it is not clear if these values exceed the generic GSI or a mixing-zone based GSI. The text also indicates that the zinc is most likely from galvanized wells and that the mercury is naturally-occurring and that these chemicals will be evaluated further in the Hydrogeologic Monitoring Plan, but what about the other chemicals that currently exceed the GSI? Perhaps the plan is to: 1) Install the cap and monitor; 2) Compare any remaining groundwater concentrations at the point of compliance to the generic GSI; and 3) If any remaining groundwater concentrations exceed the generic GSI at the point of compliance, establish background concentrations and/or perform a mixing zone determination to see whether or not the groundwater needs to be contained? MDEQ's plan to address chemicals that are currently above the generic GSI, and those that may remain above the generic GSI even after the cap is in place, must be fully explained. However, please note that EPA does not agree that groundwater remediation is triggered by exceeding surface water quality standards. For this OU, EPA considers GSI criteria TBCs to be achieved to the greatest extent practicable. (Underlined text has been added by EPA since original submittal)*

Concentrations of these analytes exceed generic GSI criteria (manganese only exceeds the commercial drink value). The text was modified to make this clear, and the section was expanded to discuss each analyte. While zinc may be an artifact of well construction, it should be evaluated in a long term groundwater monitoring program, considering that zinc concentrations in soil exceed the GSI Protective Criteria. MDEQ is not eliminating it as a contaminant of potential concern.

Statements that mercury is naturally occurring are artifacts of BBL's previous versions of the document. That language has been removed. It is now mentioned that in subsurface soil, the highest hits of mercury are associated with residual material.

It could be argued that a cap could significantly decrease the current constituents of concern in groundwater to levels below the appropriate criteria. Under capping alternatives, the PRPs are likely to pursue a mixing zone determination, which is allowed according to Part 201 Rule 716. MDEQ believes that groundwater data are not sufficient at this point to call for a groundwater remedy. It is appropriate to establish a long term monitoring network with agreed points of compliance, using the resultant hydraulic data to better derive mixing zone criteria. The FS mentions that the "remove and haul" alternative would remove long term monitoring requirements, and that all other alternatives must consider groundwater remedies a possible outcome. We recognize, in the document, that a groundwater remedy could cost more to implement after a cap is constructed, especially if certain remedial technologies (i.e. shallow aquifer drains and sumps) are not constructed as part of the design before the cap is completed (as was at OU1, but not at OU3). We believe establishing a groundwater monitoring network needs to be the first step of RD, considering results could drastically influence RA.

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Section 6.3 was changed to generally describe the procedure for groundwater monitoring, comparison to criteria, and possible need for a contingent remedy. The administrative rules for Part 201 allow groundwater data to be evaluated statistically (i.e. 95% UCL of the mean) for comparison to criteria. The rules also allow for the evaluation of the significance of any exceedance before implementation of additional response activity to control the discharge. Such evaluation would consider, at a minimum, the magnitude and expected duration of the exceedance and the feasibility of implementing additional response activity.

It is MDEQ's position that GSI criteria are ARARs, as Part 201 (Sec 20120(a)(15)) specifically requires venting groundwater to comply with Part 31 and its rules. Part 31 Rules 4 and 8 specifically allow derivation of criteria for venting groundwater. While this is a requirement more stringent than federal water ARARs, it is still an ARAR.

The phrase "to the greatest extent practicable" was not included in the revision, as this language applies to removal actions, not remedial actions.

17. *Section 5.3, Fate and Transport in Groundwater, Page 5-3, Paragraph 3. This paragraph suggests that the mercury found in AMW-5 is due to naturally occurring sources. However, the text should also indicate that mercury was detected in 10/17 subsurface soil samples from the A-Site at concentrations as high as 2.1 ppm (see Table 4-10). The Part 201 soil criteria for the protection of groundwater for mercury is 0.1 ppm.*

The text was changed to: "Mercury was detected in one groundwater sample (from well AMW-5) out of the 27 sampled at the WB/A-OU; this concentration exceeded the generic GSI value. Well AMW-5 is an existing well in the dike, screened in native materials. Mercury was detected (as high as 2.1 mg/kg) in 10 of 17 subsurface soil samples at the A-site, at levels higher than the soil GSI protection criteria (0.1 mg/kg). However, mercury was not detected in any other groundwater or leachate samples collected from wells screened (approximately 6 inches) below the residuals or in the residuals at the WB/A-OU."

A similar paragraph discussing TAL/TCL (Page 4-13) was also changed.

18. *Page 6-3: Delete the paragraph that starts with, "While the pathways and exposure..." Exposure pathways are understood and the ecological risk assessment has been finalized.*

The paragraph was re-written to: "Representative exposure mechanisms for ecological receptors in and along the Kalamazoo River are evaluated in the BERA. After analysis of exposure, the document sets threshold values for PCB for important groups of ecological receptors such as fish, omnivorous birds, and carnivorous mammals. If soils and sediments above threshold values are not addressed, adverse effects on the local ecology are possible. The ranges of threshold values established by the current BERA are used to establish cleanup values which can be reasonably applied to areas of the site."

Also on this page, Michigan Administrative Code (R 299.5744 through 299.5750), which

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establishes risk-based generic cleanup criteria, is now listed as a reference important in evaluating risks for the site. Inclusion of the generic cleanup criteria tables is based on our conversation on 10/23/03, where you summarized a discussion you had with Milt Clark on risk assessment.

19. *Page 6-6, First Paragraph. The sentence states that the “RI indicated a potential for surface water to contain PCB when in contact with PCB-containing sediment.” Where in the RI for this OU was the connection between sediments and surface water, and between PCBs in sediments and PCB concentrations in surface water explored and determined? Please explain or revise.*

The section was revised to refer to RI Section 5.2, which discusses the possibility of erosion. The phrase “potential... to contain PCB” was replaced with “potential to suspend... PCB-containing material.” Pictures have been added to emphasize that erosion and suspension of contaminated material is intuitive considering the proximity to the river and the slope of the banks.

20. *Page 6-6, Section 6.2.1.4: Some mention should be made here and throughout the document about the relative impermeability of the residuals, particularly if MDEQ is hoping for approval of a risk-based disposal method. We need information regarding why EPA should give such an approval. Also, the discussion throughout regarding the threat to groundwater is not balanced by a discussion of the impermeability of the residuals and adsorption of PCBs to the clay soils.*

The residuals are not impermeable, and low permeability is theoretical depending on how residuals were placed at the OU. MDEQ is willing to allow the PRPs to implement their proposed remedy of capping, but only with groundwater monitoring and contingent treatment remedies. MDEQ would support EPA in selecting a removal remedy if a risk-based on-site remedy is not supported. While we expect a cap to help reduce the threat of groundwater release, there is no doubt that would eliminate any chance of remedy failure.

21. *Page 6-6: Sentences stating “These potential risks will be further evaluated through a groundwater monitoring program... determined during the development of the Hydrogeologic Monitoring Plan” are misplaced. This is not the ROD, and this document should not predetermine what remedy is selected. Delete or revise to state something like, “Each alternative considered in this FS includes a”*

The word “will” has been removed, except from paragraphs under the alternatives that include groundwater monitoring. Section 4.2.7, Long-term groundwater monitoring, discussed in Section 6.2.2, is considered in most alternatives of the FS.

22. *Page 6-7, Section 6.2.2, Remedial Response Objectives, Surficial Soils and Residuals, Sediment and Surface Water: Section 1.2, OU Description on page 1-3 and Figure 3 identifies 6 areas of the site. In discussing the remedial response objectives for surficial soils and residuals, sediment and surface water, please be specific as to which area or areas each specific objective pertains to. As noted in Comment 7, additional justification*

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is needed to apply sediment and surface water. Also, please be advised that EPA does not accept the state's water quality criteria numbers as ARARs for this OU, except to the extent that any discharges directly to the river from dewatering activities should meet the criteria. Also, EPA is not going to assume that groundwater remediation is triggered by the 0.000012 ug/L water quality standard. For this OU, the surface water quality and GSI criteria are only TBCs to be achieved to the greatest extent practicable. Based on the RI/FFS and the site-wide human health and ecological risks assessments for the site, EPA believes that the following response objectives would be appropriate for this OU. Some additional comments concerning leachate and groundwater also follow:

Landfills: Prevent human exposure to PCB concentrations above 20 mg/kg, which is the MDEQ state industrial cleanup value based on a risk of 10⁻⁵. In areas adjacent to the Kalamazoo River and Davis Creek that are inundated with water for at least 2 months a year, protect human health and terrestrial organisms by preventing aquatic exposure to PCB-contaminated materials above a SWAC of 0.6 mg/kg (i.e. the value established by the ecological risk assessment for in-stream sediments). Similarly, in areas adjacent to the Kalamazoo River and Davis Creek that are below the 100 year flood elevation, protect human health and terrestrial organisms by preventing aquatic exposure to PCB-contaminated material above the in-stream sediment ecological risk value by preventing erosion of PCB-contaminated materials above a SWAC of 0.6 mg/kg.

Drainageways South of Landfills, Area East of Davis Creek and AMW-3 Area: In areas at or below 670[sic] ft-msl elevation (the elevation shown to be inundated in Figures 12, 12A, 13A, 13B and 13C), protect human health and terrestrial organisms by preventing aquatic exposure to and erosion of PCB contaminated materials above a SWAC of 0.6 mg/kg (i.e. the value established by the ecological risk assessment for in-stream sediments). In areas above the 670 ft-msl elevation mark, prevent human exposure to PCB concentrations above 20 mg/kg, which is the MDEQ state industrial cleanup value based on a risk of 10⁻⁵; and prevent terrestrial exposure to PCB contaminated materials above a SWAC of 6.5 to 8.1 mg/kg (i.e. the range of values established in the ecological risk assessment for soil).

Residential areas: Prevent exposure to PCB concentrations above 2.5 mg/kg, which is consistent with a 10⁻⁵ risk under a residential scenario.

Kalamazoo River Sediment: Remediation of Kalamazoo River in-stream sediment is only indirectly an RRO for this remedial action, which essentially seeks to consolidate and contain PCB-contaminated wastes and prevent erosion of PCB-contaminated wastes into the Kalamazoo River. In-stream sediments will be directly addressed as part of the remedial action for the Kalamazoo River. MDEQ anticipates that the remedial action for this operable unit will be consistent with any remedial action for the River. To the greatest extent practicable, the remedial action for this OU should prevent further contamination of in-stream sediments above the range established in the human health and ecological risk assessments for the Site.

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Surface Water: Michigan has established surface water quality criteria to protect the quality of the surface water bodies of the state. The Kalamazoo River, upstream and in the vicinity of this operable unit, does not achieve the State's surface water quality criteria for PCBs. To the greatest extent practicable, this remedial action should prevent further degradation of the water quality criteria of the Kalamazoo River by preventing erosion of PCB-contaminated wastes from the landfill into the River.

Leachate: One of the RROs of this remedial action is to prevent the generation of PCB-contaminated leachate at the disposal areas. Whether leachate currently exists at the Willow Blvd./A-Site will be determined during the design phase of the remedial action. If leachate currently exists, or if the threat of leachate migration will exist subsequent to implementation of the remedy, then the RROs for this response action include the protection of the surface water quality of the Kalamazoo River by preventing the transportation of any such leachate to the Kalamazoo River. Each capping alternative described in this FS includes a component requiring evaluation of potential leachate generation at the landfill subsequent to capping.

Groundwater: The Michigan GSI criteria are designed to ensure the protection of aquatic life by addressing the threat posed to the surface water bodies of the State by contaminated groundwater. One of the RROs for this response action is to ensure, to the greatest extent practicable, that contaminated groundwater at the disposal areas does not migrate to the Kalamazoo River and result in further jeopardizing the health of the aquatic species in the River (and, through consumption of contaminated fish, to human health and terrestrial life). Each capping alternative described in this FS includes a component requiring monitoring and evaluation of potential groundwater contamination subsequent to installation of the cap over the landfill.

Changes were made to 6.2.2 to clarify where the RROs could apply. The text EPA provided text was used as a basis ("to the greatest extent practicable" was not included, as this language applies to removal actions, not remedial actions.) We believe it is appropriate to mention what the surface water quality values are, though it has been explained in the document that waters upstream do not achieve these criteria either. Groundwater and leachate have been left together as one goal; most other changes recommended by EPA were made.

Language was also added to clarify that residential criteria apply to all areas accessible to residents or not restricted from residential development.

Criteria developed under Part 31 are ARARs for the site. Part 201 requires compliance with Part 31 whenever a remedy allows venting groundwater. Michigan statute goes beyond point source discharge, specifically including venting groundwater. The Part 201 generic GSI criteria for PCB defaults to the Target Detection Limit (0.2 ug/L). While the more stringent surface water quality values are important long-term "big picture" goals, 0.2 ug/l PCB is the level that will be enforced by MDEQ at the groundwater points of compliance (which do not yet exist). Other contaminant concentrations will be compared

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to GSI criteria and enforced (whether by generic criteria or mixing zone based criteria) at compliance wells.

23. Section 6.2.2, Remedial Response Objectives for Groundwater and Leachate on Page 6-7 only includes response objectives for PCBs, and not for any of the other chemicals that exceed the GSI or health-based industrial drinking water criteria (e.g, arsenic). It is not clear why these chemicals are not being addressed. The comment below also applies here.

RROS for other contaminants are now mentioned, though specific cleanup values are not listed beyond saying that GSI criteria apply). There should be flexibility in design to establish mixing zone criteria, as opposed to relying on default generic criteria. All generic criteria can be listed if EPA desires.

24. Section 6.2.2, Remedial Response Objectives for Groundwater and Leachate on Page 6-7, and Discussions for Alternatives 2 to 2C in Section 7. These sections need to clarify the response objectives for PCBs in groundwater and how established exceedences at the point of compliance would be addressed. For example, the remedial response objective for PCBs in groundwater is to prevent the transport of PCB contaminated groundwater to surface water at concentrations exceeding 0.000012 to 0.000026 ug/l or method detection limit. It is not clear what this means. I assume that the 0.000012 ug/l value refers to the wildlife value and the 0.000026 ug/l refers to the human non-drink value, but the generic GSI is listed as the method detection limit of 0.2 ug/l. What happens if long-term monitoring at the point of compliance is greater than 0.000012 ug/l, but less than 0.2 ug/l, since we already have PCBs in the groundwater at these concentrations, and the detection limits for PCBs in the RI/FFS are as low as 0.051 ug/l? What is the remedial action objective? What is the ARAR? 0.000012 ug/l? 0.000026 ug/l? 0.2 ug/l? or 0.51 ug/l? Is there a difference between the remedial action objective and the ARAR? If there is, this should be explained. At what point would a groundwater containment or treatment system need to be installed? Also, if PCBs were detected above the "action level" (whatever it may be), would a mixing zone determination be made? Please discuss MDEQ's rules and regulations for mixing zones for PCBs and other bioaccumulators, and note whether they are policy or statutory. Also, what constitutes the "point of compliance"? Would a groundwater pump and treat or containment system be installed if contamination was above criteria in only one well? Or would exceedences have to be in more than one well along the discharge zone? Please clarify and include appropriate policy/statutory references to support MDEQ's position.

The section has been changed to clarify the GSI number that will be enforced:

The Michigan Groundwater Surface Water Interface (GSI) criteria are established by Michigan Administrative Code and are designed to protect aquatic life by addressing the threat posed to the surface water bodies of the State by contaminated groundwater. One of the RROs for this response action is to ensure that contaminated groundwater at the disposal areas does not migrate to the Kalamazoo River and further jeopardize the health

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of the aquatic species in the River (and, through consumption of contaminated fish, to human health and terrestrial life). Each capping alternative described in this FS includes a component requiring monitoring and evaluation of potential groundwater contamination subsequent to installation of the cap over the landfill.

Another RRO of this remedial action is to prevent the generation of PCB-contaminated leachate at the disposal areas. Whether leachate currently exists at the Willow Blvd./A-Site will be determined during the design phase of the remedial action. If leachate currently exists, or if the threat of leachate migration will exist subsequent to implementation of the remedy, then the RROs for this response action include the protection of the surface water quality of the Kalamazoo River by preventing the transportation of any such leachate to the Kalamazoo River. Each capping alternative described in this FS includes a component requiring evaluation of potential leachate generation at the landfill subsequent to capping.

Consistent with Part 201 Rule 716, before a remedial action for the site is approved, a mixing zone determination can be requested from MDEQ. Criteria (reported as chronic criteria and acute criteria) established in the mixing zone determination, rather than generic GSI criteria, would then apply to the site. In a mixing zone determination, factors such as flow and assimilative capacity of the river, rate of groundwater discharge, and concentrations upgradient of the site are factored in to the criteria. Whole effluent toxicity testing could also be used to establish protective criteria. In a mixing zone determination, criteria for some analytes are likely to be less stringent than generic criteria, however, values for bioaccumulative chemicals of concern (such as PCB and mercury) are not likely to change from the generic values. A compliance area would be established, consisting of monitoring points close to the river, in areas where generic GSI criteria are exceeded or are expected to be exceeded. For each sampling event, the 95% UCL of monitoring points within the designated GSI compliance area would be calculated to see if chronic criteria are exceeded. No exceedances of acute criteria at individual monitoring points would be allowed. In the event that groundwater/leachate discharge exceeding chronic or acute criteria is predicted or has occurred, compliance monitoring plans may call for increased monitoring, evaluation of the severity of any exceedance, and evaluation of the need to implement further remedial actions.

Specific RROs for groundwater and leachate are:

- Prevent transport of PCB-contaminated groundwater/leachate to surface water at a concentration exceeding Part 201 generic GSI criteria (0.2 µg/l or Target Detection Limit)
- Prevent human ingestion of PCB-contaminated groundwater/leachate at a concentration exceeding 0.5 µg/l
- Prevent transport of non-PCB contaminants, exceeding generic GSI or mixing zone-based criteria, via groundwater/leachate venting to surface water.
- If there is collection or treatment of groundwater, discharge to surface waters of the state must attain water quality criteria, consistent with Part 31 of the NREPA.

25. Page 6-10, Section 6.3.2, Alternative 2. According to this section, additional

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characterization of soils south of Lot 5 is necessary to ensure that residential criteria are attained. Please provide the justification for this additional sampling. According to Section 6.2.1.2, Surface Soils, Sediment and Residuals, Paragraph 1 on Pages 6-4, surface soils at the Willow Blvd. OU exceed criteria including the residential thresholds of 2.5 to 4 mg/kg. But then, in Paragraph 3 on Page 6-5, no PCBs were detected on residential properties above criteria (including Lot 5, the Bloomfield property) and the extent of PCBs has sufficiently been defined for these properties. In fact, at Lot 5, PCBs were only detected in 2 of the 4 surface soil samples collected from this lot at concentrations of 0.14 and 1.5 mg/kg, and no PCBs were detected at depth. Therefore, it is not at all clear why additional sampling in the residential lots south of Lot 5, which are even further away from the landfills, is warranted. Please revise the relevant sections of the RI/FFS to provide a thorough justification for why this sampling is necessary and/or eliminate the inconsistencies between these sections of the report.

Section 6.2.1.2 has been changed: "Surface soils at this operable unit exceed the industrial criterion and residential criterion (if residential use is not restricted) and therefore pose a potential human health risk. Currently, no residential yards have PCB concentrations higher than the residential criterion."

The wording of the RI/FFS was specifically selected so that conclusions would be limited to sampled areas. The wording lets residents (who know their yard was sampled) see again that their yards do not pose a significant risk. The RI/FFS only speaks about samples that have been collected. The statement describing no exceedences in sampled residential areas is true, but does not eliminate the possibility that there are PCB hits on properties that weren't sampled. MDEQ is not saying it's necessary to sample every residential property in the greater Willow Boulevard area-- previous soil borings and test pits defined the extent in most areas. However, the area south of lot 5 is still an open question, even though it is "upgradient" of the site—we just can't say we have complete delineation there.

Sampling south of Lot 5 is appropriate because SB-3A-213 (Figure 18), which is the southern-most and western-most sampling point in the area, showed 5.9 mg/kg PCB in the top 2 feet. The samples collected from Lot 5 (Figure 21) have nothing to do with our conclusion, as samples there indicate Lot 5 meets criteria. There are no samples adjacent to SB-3A-213 to delineate the southern and western extent of the contamination there. It may be an anomalous detection, but it's possible that Lot 4 and Lot 3 (at a minimum) have similar PCB concentrations, thus exceeding of the residential criterion of 2.5 mg/kg. It is possible that the hits in the AMW-3 might be related to the hit near Lot 4.

The language on Page 6-5 was left alone, as it is limited and specific to the properties sampled.

26. Page 6-11, Section 6.3.2.2, Alternative 2B, Section 6.3.2.3, Alternative 2C, and Table 7-1B, Page 1 of 5 and 7-1C, Page 1 of 5: The costs for Alternative 2B (50 ft setback with rip-rap) and Alternative 2C (50 ft setback with eco-friendly options) specific to the Willow Blvd. part of the site have vastly different costs for water treatment (Item 4d). In Alternative 2B, it would cost over \$1.2 million for water treatment while in Alternative

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2C water treatment only costs \$100,000. Please include some additional details in Sections 6.3.2.2 and 6.3.2.3 to explain why water treatment costs over a million dollars more for one option than the other since this is not clear.

There is a significant discrepancy between PRP (57.6M gallons, Item 4d, Table 7-1B) and MDEQ (1M gallons, Item 4d, Table 7-1C) estimates for the quantity of water that would be generated and require treatment through site remedial activities. All numbers in the cost tables have been modified and are now consistent with MDEQ and CDM volume estimates. This adjustment removed the discrepancy, and did not affect the ranking of the remedial alternatives.

27. Page 6-11, Section 6.3.2.2, Alternative 2B, Section 6.3.2.3, Alternative 2C, and Figure 23. *From the descriptions of the alternatives and Figure 23, it is not clear what is meant by the 50 ft setback. Does this mean that a 50 foot strip of the landfill along the river would be excavated and consolidated with the other landfill materials, making the river 50 feet wider? Where would the berms go? 50 feet out from the new shoreline? More details and a cross-section similar to Figure 23 showing the location of the berms, the setback, and the new banks would be helpful. Similarly, it would also be helpful to have figures showing how the river bank would look under Alternative 2 (bank stabilization, no setback) and Alternative 2A - sheetpiling. This will be useful for helping the public to understand how the different alternatives would look.*

In Sections 7.2.2.1 (Alternative 2A, Page 7-14), 7.2.2.2 (Alternative 2B, Page 7-17), and 7.2.2.3 (Alternative 2C, Page 7-22), the following reference will be added as the last line of each subsection titled "Bank Stabilization and Erosion Control Measures": Figure 23A presents a conceptual cross-section of the proposed remedial alternative bank stabilization measures.

28. Page 6-11, Section 6.3.2.3, Alternative 2C and Table 7: *The costs specific to the A-Site in Table 7 for Alternative 2C are \$800K more than the costs specific to the A-site in Alternative 2A, even though MDEQ has confirmed that there should be no difference in the work that would be done at the A-Site in Alternative 2A and Alternative 2C. Please explain this cost difference and/or re-calculate as necessary. Maybe it's a typo?*

The typographical error in the table was been corrected and the text modified.

29. Page 7-8, Type III Cover System. *Please provide additional details to explain why the cover system in the containment alternative exceeds the 2-foot thick low permeability cap and 6-inch topsoil layer for vegetative cover generally required for Type III cover systems. More justification is needed to explain why the additional elements such as the 30-mil FML, 6-inch gas venting layer/soil cushion, 24-inch soil/drainage layer and 6-inch topsoil layer are necessary, and why the standard 2-foot clay/6-inch soil cap was not even considered in the FFS as a remedial alternative.*

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The final cover requirements as written are consistent with Type III cover system Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA451, as amended, and have incorporated the recommendations of MDEQ Waste Management Division staff (Timothy Unseld, 4-16-1997; 5-3-2000). This is what the PRPs originally proposed in their version of the RI/FS. Further, the cap design is consistent with what was implemented at King Highway Landfill (OU3) and specified in 12th Street Landfill (OU4) ROD.

30. *Page 7-9, Overall Protection of Human Health and the Environment. Please provide more detail to explain how this alternative is protective in areas, such as those at the Willow Blvd. site, where up to 10 feet of residuals is below the water table. Why wouldn't excavation be a more appropriate solution in these areas? How do we know excavation is not warranted? Please explain, since the public is bound to raise this concern.*

Excavation and off-site disposal would be the most protective of both human health and the environment and is an appropriate solution. It is, however, approximately three times more costly and may not provide three times the protection to human health and the environment.

31. *Pages 7-9 to 7-11, ARARs. Please discuss how this alternative would comply with RCRA. Are RCRA landfill and capping regulations ARARs? Why or why not? Also, the ARAR discussion needs to include the Rivers and Harbors Act.*

As the OU is basically an unlined monofill, none of the alternatives that have a component of leaving materials on-site and capping comply with RCRA landfill requirements. By MDEQ's analysis, such remedies don't need to comply with RCRA (as CERCLA applies to releases and is sufficient), but EPA Superfund may wish to verify with Region V RCRA contacts.

PCB is a TSCA waste. It is not a RCRA listed hazardous waste and RCRA would only apply if the waste exhibited a toxicity characteristic and was hauled off-site. Willow Boulevard soils (and Georgia Pacific residuals) did not fail previous EP Toxicity Tests and would not be characteristic hazardous waste under RCRA. Given the concentrations of contaminants in soils at the OU, wastes are not likely to fail TCLP.

RCRA was added as an ARAR to the off-site disposal alternative. If a hazardous waste characteristic is exhibited, waste would have to be treated before going to a disposal facility. Toxicity and treatment are not likely necessary, so associated incremental costs are not considered in the FS. It is noted, however, that this alternative could be more expensive than estimated. This does not impact the comparison of remedies.

With respect to the need to include the Rivers and Harbors Act, variations of the following language was added to each alternative:

Rivers and Harbors Act of 1899 (33 USC 403). The federal Rivers & Harbors Act

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prohibits unauthorized obstruction or alteration of the navigable capacity of waters of the United States (fill, cofferdams, bulkheads, etc.), except on plans recommended and authorized by the Army Corps of Engineers. Remedial activities, which may require a permit to perform, must be conducted in such a way that they will avoid unacceptable obstruction or alteration of the Kalamazoo River channel.

Rivers and Harbors Act of 1938 (33 U.S.C. 540 and other U.S.C. sections; Chapter 535, June 20, 1938; 52 Stat. 802). This federal act provides for wildlife conservation to be given "due regard" in planning federally authorized water resources projects.

32. *Page 7-10: Michigan water quality criteria are a TBC for the soil components of this remedy, not an ARAR.*

Part 31 and the Part 201 groundwater criteria are ARARs. Part 31 states, "The department shall protect and conserve the water resources of the state and shall have control of the pollution of surface or underground waters of the state and the Great Lakes, which are or may be affected by waste disposal of any person." Part 201 specifically requires that any remedy allowing venting groundwater comply with Part 31.

33. *Page 7-11: PRPs are entitled to know now what the hydrogeologic monitoring plan would require, and where state's cost figures for groundwater remediation have come from.*

These costs are explained in the tables. The cost estimates are consistent across all alternatives that require groundwater monitoring. Specific numbers of wells (and background wells) should be specified in a RD SOW.

34. *Page 7-14, Bank Stabilization. Please clarify how deep the sheetpiling would extend in relation to the landfilled residuals and the underlying soil.*

Figure 12A shows the sheetpiling as it currently exists on the A-Site, and it is assumed that if any additional sheetpiling were driven as part of any remedial option, that it would be driven to at least this depth. It is not specifically stated in the text, but the text could be modified on pages 7-7 (Alternative 2) and 7-14 (Alternative 2A) to state a minimum depth that sheetpiling shall be driven.

35. *Throughout document: State and community acceptance should be evaluated now, and again after Proposed Plan is issued. If the community has expressed a preference for removal of sheetpile, or excavation of all residuals, it should be noted here. Similarly, the MDEQ should also indicate its preference. State and community acceptance are good rationales for selecting one alternative over another.*

State Acceptance

State acceptance, while preliminary, is analyzed with a review of historic site files:

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In 1989, the State of Michigan went on record (Zugger, 1989; Kalamazoo Gazette, 1990), stating its first preference would be removal of all contaminated materials from the floodplain. Upon reviewing “consolidate and cap” remedies, the State acknowledged that sheetpiling has a limited lifespan, but indicated consolidation, sheetpiling, and geomembrane capping is technically feasible. The review concluded that with maintenance and monitoring (and replacement requirements) a “consolidate and cap remedy” would be protective of public health and the environment. The State also indicated that if capping were implemented, periodic evaluation of the feasibility of on-site treatment would be necessary; further, if ever deemed feasible, on-site treatment would be required.

Historically, acceptance of a “cap and contain” remedy was conditional on resolution of a number of issues, including: (1) insuring sheetpiling is sealed between piling sections and the cap and (2) Evaluation of the installation of sheetpiling on the south side to further reduce groundwater infiltration through the site.

A capping remedy was actually proposed to the public by MDNR in 1990. While the State will not give formal acceptance until completion of the public comment period, it is expected that the state would support selection of a “consolidate and cap” remedy now.

Community Acceptance

As a remedy has not been formally proposed, issues pertaining to community acceptance were evaluated in a preliminary sense, in the following ways:

1) Review of newspaper articles (i.e. Kalamazoo Gazette, 1990), summarizing public meetings on previous “consolidate and cap” proposals. The public has historically indicated preferences for:

- an alternative that would reduce the size of the landfill footprint, as they considered capping a loss of community resource.
- remedies that remove PCBs from the site

2) Review of letter from the Chairman of the Kalamazoo County Board of Commissioners, outlining concerns with a previous proposed action plan at Willow Boulevard (Drenth, 1990). This board, elected by the public indicated:

- a preference for removal of the PCB contaminated soils and sediments where practical.
- A concern that groundwater could be a potential source of contamination to the Kalamazoo River.
- A desire to include, with the remedy, a stipulation that the Willow Boulevard Site be reviewed every three to five years to determine if technology has become available to allow removal of the PCBs.
- Any economic redevelopment plan for the Kalamazoo River would be hindered until removal of PCBs is accomplished.

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3) Review of two summaries (Moore, 1984; Geitka, 1984) of a public meeting in 1994, where potential remedies for the WB/A site were discussed. One member of the public expressed concern with venting groundwater. Another citizen specifically asked for removal of contaminated soils, especially those saturated with groundwater.

4) Review of public comments on a similar Operable Unit. In a public meeting on the Proposed Plan at the King Highway Landfill (Great Lakes Shorthand Reporting, 1994) the Kalamazoo River Protection Association stated they were “not very supportive” of the “consolidate and cap.” They also indicated a desire for a remedy that did not preclude trails near the river. A representative of a neighborhood association clearly indicated a preference for alternatives that removed and disposed of materials off site. While generally, most commenters seem opposed the capping alternative, one citizen called capping “the most realistic and probably the best approach.”

5) Review of public comments attached to the King Highway Record of Decision (MDEQ 1998), which selected a “consolidate and cap” remedy. Comments on alternatives proposed included:

- An unknown number of commenters and the Kalamazoo River Protection Association expressing preferences for alternatives involving removal and treatment.
- Three commenters supported a cap and contain alternative, saying such things as it “is the lowest cost while protecting the environment”
- An unknown number of people supported a cap and contain remedy, but only with consideration of future treatment.
- Two commenters stated that any cap and contain remedy should be compatible with future recreational use.

6) Review of a Kalamazoo River Area of Concern Public Advisory Council newsletter (PAC 1998), listing their interests and concerns. The letter stated their position that consolidate and cap remedies are “far from an idea solution” and are “seen as a short-term solution.” The PAC further stated that “future flooding or deterioration of containment structures and materials is clearly possible.” They also stated that “on-going monitoring is essential.”

7) Review of comments received on the draft RI/FS for the Kalamazoo River, which evaluated consolidate and cap remedies. While the alternatives were specific to a cleanup of the river, the comments to containment might apply.

- 26 supported an independent statement of a preferred remedy, developed by the Kalamazoo River Protection Association. The plan outlined that PCB-waste must be disposed of in off-site landfills; KRPA stated no landfills should be allowed adjacent to the river.
- 405 out respondents expressed desires consistent with removal, offering support

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for an alternative that would “use off-site approved landfills” No respondent spoke out against off-site disposal or in favor of on-site disposal facilities.

- 2 individuals expressed that “PCB contaminated material must be disposed of in an off-site licensed landfill or through a yet-to-be determined PCB decontamination technology.

Overall, comments similar to those previously received are anticipated. It is expected that the public would enthusiastically support a removal alternative. Support of a capping alternative is likely to be very limited and is anticipated only if it includes a stringent maintenance and monitoring program, does not completely restrict some beneficial use, and future treatment is not precluded.

36. *Throughout Document: If the state/EPA wants to reject any alternative that is cheaper but just as effective, there has to be a justification under the NCP criteria. Habitat and eco-friendly materials are not considerations under the NCP. Please revise.*

Considering the number of public statements MDEQ has heard on cap and contain remedies, habitat and ecologically friendly alternatives are elements that would improve community acceptance. This could be specifically evaluated during public comment.

Furthermore, the USEPA Contaminated Sediments Technical Advisory Group comment was “select remedies that avoid or minimize impacts to aquatic habitat, or provide for habitat mitigation to compensate for unavoidable impacts. For example, if sheet piling is proposed, more habitat friendly alternatives should also be considered.” It was our assumption that the recommendations of the CSTAG were consistent with the NCP. The CSTAG recommendation has been added to the FS discussion of alternative 2-C.

37. *Throughout the Document: How the setback for Willow Blvd. would work needs to be explained. Does MDEQ have data to support what materials would need to be pushed back – i.e. by PCB concentration? How was the need for a 50' setback determined? What calculations were done? Why wouldn't a narrow setback (and less excavation along the riverbank) work just as well? How deep would the residuals be excavated in the setback area? How was this determined? Also, as requested in an earlier comment, would a berm then be constructed on the outer edge of the 50' setback, between the setback and the river?*

Set back based on average 10' drop at A-site with 5:1 slope per WMD recommendations on residual slope. Smaller set backs equal greater loss of habitat and long term damage to ecology. The less the setback, the more impingement on the flood plain and the less natural the setting. This option was added at the request of EPA based on feedback received during a public meeting. Estimates can certainly be firmed up and better defined, but this was a place holder to develop FS level costs for the option. Berm or sheetpile would need to be constructed based on the final elevation and desired slope of

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the residual caps. This level of detail was left to the RD stage after confirmation that the site could conceptually hold the volumes displaced in the setback option.

38. *Page 7-15, under Heading "Part 31 of the NREPA," EPA assumes the statement "As experienced at other operable units along the river" refers to the Allied Paper OU. Whether the sheetpiling is contributing to groundwater contamination is in sharp dispute between Millennium Holdings and MDEQ. EPA suggests deleting this reference.*

The text was changed.

39. *Page 7-16: The estimated cost of this alternative in this text is \$11.74 million. Table 7-1 states the cost as \$13.2 million. Which is correct?*

Table/text have been adjusted so they are consistent

40. *Page 7-17: What data justified a 50' setback, rather than, say, 25 or 30 feet? 100 year floodplain level? Some other figure?*

There is not data to select a 50 foot setback. EPA (Short) suggested the 50 foot setback distance. An appropriate distance could be evaluated in remedial design.

41. *Throughout Document: Will the 50' setback require any clean fill? What will be the slope of the setback? What will be the residual PCB concentration in remaining soils?*

Setback will not require clean fill, will be a flat floodplain area, and residual PCB concentration in the remaining soils will be

42. *Page 7-18: Discuss compliance with the Rivers and Harbors Act ARAR. Any remedy that involves pushing the floodplain back has to deal with the River and Harbors Act, which requires that floodplains not be altered in certain ways.*

It could be argued that Section 10 of the Rivers and Harbors Act was violated with the initial placement of fill into the river and in the floodplain. The Corps of Engineers could be consulted during RD, but I have been informally told that their jurisdiction does not extend upstream of the Lake Allegan Dam.

43. *Page 7-21: Is the cost of the 2B Alternative \$14.71 million or \$14.77 million? See Table 7-1.*

Costs are now consistent throughout document.

44. *Alternative 2-C: If the state wants to consider this alternative, it needs to add some kind of a discussion that habitat improvement is not a criterion under the NCP, but perhaps under state law it can be considered? Or, add a discussion of community/state acceptance of this alternative.*

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The analysis of this alternative was changed to emphasize how it could achieve community acceptance.

45. *Table 7-1 needs to reflect that Alternative 2-C requires a 50' setback.*

Will correct table

46. *Tables 7-1B and 7-1C. What are the excavation costs for the 50' setback? In Tables 7-1B and 7-1C, the only costs listed under Item 3, Mechanical Excavation are "costs for excavation of drainageway as necessary to construct cover system" (for the Willow Blvd. site) and costs for "excavating residuals east of Davis Creek and south of A-site Berm as necessary to construct cover system and relocating to stabilization area" (for the A-site). It seems like costs for excavating 50 feet of the landfill along the riverbank for both sites or even just the Willow Blvd. site could be significant. Please clarify.*

No response formulated to date

47. *Page 7-28: Discussion indicates that any materials over 10 ppm PCB would be covered. Covered with what?*

This is an artifact of a previous version of the FS, prior to development of ecological criteria. The language has been changed for consistency.

48. *Alternatives 3 and 4: Since both of these alternatives involve excavation and trucking of PCB-contaminated wastes, RCRA may be triggered as an ARAR, not just a TBC.*

RCRA potentially applies to Alternative 3, where material would be moved off site. Alternative 4 activity is all on site.

49. *Page 7-41 to 7-42: EPA is uncertain that the King Highway Landfill ROD included a pump and treat system, as suggested here. Please verify.*

The reference to KHL was deleted.

50. *Section 8, Preferred Remedy Discussion: Since the state took over the writing of this RI/FS, can this "preferred remedy" discussion be deleted? Apparently the inclusion of such a section was part of the AOC, but since Georgia-Pacific did not create the document, it is no longer necessary. Aesthetics simply do not justify a remedy choice.*

Per the AOC, this is a required element of this document. EPA indicated agreement in an email from Karen Cibulskis dated June 3, 2003

51. *Figure 22, Total PCB Groundwater Detections: Please indicate somewhere on the figure that all groundwater monitoring wells were sampled in 2000 and that only detected concentrations are shown.*

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If requested, this can be accomplished

52. ARAR Chart:

Chemical Specific

40 CFR 131: This CFR provision is not an ARAR since it specifically sets “goals,” not requirements, and procedures for state-adopted water quality standards. It can be listed as a TBC, but is not really necessary at all, since the state standards are promulgated and approved.

40 CFR 122 and 136: These CFR provisions are not just monitoring requirements, as described here. Section 122 establishes the federal NPDES permit system, and 122 establishes test procedures for the testing of pollutants.

RCRA: the dike guidelines of RCRA would not be a chemical-specific TBC, but rather an action-specific TBC.

TSCA: As noted in the text of the FS, only the PCB Remediation Waste Rule (“Mega rule”) is an ARAR for purposes of this OU. Only reference should be to 761.61.

Michigan Part 31 Standards: This ARAR needs to be explained at some length. The surface water quality standards can be identified as a TBC for purposes of the erosion control and setback components of the alternatives. Part 31 standards can be an ARAR for purposes of discharges of wastewater from the dewatering activities.

Michigan Hazardous Waste Management Act: unless the state regulations are more stringent than federal RCRA regulations, they should not be identified as a TBC.

Action-specific

CERCLA: CERCLA is not usually identified as an ARAR.

- 33 CFR 320-330 and 33 USC 1344: These references are overly broad and inadequately described. Many of the provisions are inapplicable and irrelevant to any proposed component of any alternative. Moreover, only the substantive requirements, not the procedural requirements, of any permit would be applicable.*
- RCRA: It is insufficient to merely identify RCRA as an ARAR. Whether RCRA is applicable or only relevant and appropriate is important to determine, since a determination of relevance and appropriateness will enable the Agency to choose which RCRA regs are relevant and appropriate. When did disposal end? Can the two areas of contamination be considered a single “area of concern?”*

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- *TSCA: Only the PCB Remediation Waste Rule is an ARAR.*
- *“Water Quality Standards”: See discussion above. Except for discharges of wastewater resulting from dewatering activity, state surface water quality standards are not an ARAR for this OU.*
- *“Clean Air Act”: It is unclear what “filing requirements” should be considered, and how any filing requirement would be relevant to the relocation of residuals*
- *Either state or federal air emission standards should be added to the list as a potential ARAR in the event the emission standards are exceeded during the remedial action. Monitoring is required. Michigan Air Pollution Control regulations are referenced in the “location specific” section – should also be identified here if they are more stringent than federal requirements.*

Location Specific

- *Part 303: No permit is required so delete reference to permit application process.*
- *Michigan Public Act 451, Part 301: Unless the state regulations regarding dredging or filling of lake or streams is more stringent than the federal CWA or River and Harbors Act, delete this reference.*
- *Part 91: It is unclear under any of the alternatives identified what off-site floodplain areas could be affected. Explain how this regulation may be an ARAR.*
- *Part 31: EPA does not accept state anti-degradation standards as ARARS. Explain each of these regulations and describe why it applies or is relevant and appropriate to the remedy.*
- *Michigan Water Resource Rules: It is unclear to me whether each of these regulations (from R323.1901 to R323.2192) is an ARAR. Are these rules more stringent than federal requirements? Explain.*
- *Michigan Part 115: Identify this as “relevant and appropriate” and not “applicable” since no liner requirement is required. Explain why no liner is required.*

Response in progress.